

WHAT IS CLAIMED IS:

1. An ink-jet printer head, comprising:
 - at least one head unit, each of which includes a first surface where at least one nozzle is provided, a second surface opposite to the first surface, and at least one ink supply hole communicating the at least one nozzle;
 - a frame including a support where the second surface of each of the at least one head unit is supported, an aperture disposed such that the second surface of each of the at least one head unit is exposed therethrough, at least one ink supply passage, an ink supply passage communicating with each of the at least one ink supply hole; and
 - an adhesive applied at the aperture to bond the second surface to the support, the adhesive being quickly hardened.
2. The ink-jet printer head as claimed in claim 1, wherein the adhesive is hardened under ultraviolet irradiation.
3. The ink-jet printer head as claimed in claim 2, wherein the adhesive is a denatured acrylic base viscosity ultraviolet adhesive.
4. The ink-jet printer head as claimed in claim 2, wherein the second surface of the at least one head unit is positioned on the frame so that the adhesive and the ultraviolet irradiation pass through the aperture.
5. The ink-jet printer head as claimed in claim 1, further comprising a cover plate attached at the first surface of the at least one head unit so that the at least one head unit is disposed between the frame and the cover plate.
6. The ink-jet printer head as claimed in claim 1, further comprising a bottom plate in the frame, the bottom plate including a third surface facing the second surface of the at least one head unit and a fourth surface opposite with the third surface, the bottom plate having a plurality of apertures that penetrate the bottom plate, each of the at least one ink supply passage communicating with each of the at least one ink supply hole of the at least one head unit.
7. The ink-jet printer head as claimed in claim 6, wherein the adhesive is applied between the second surface of the at least one head unit and the third surface of the bottom plate through the plurality of apertures, each of the plurality of apertures facing a peripheral portion of the at least one head unit such that the peripheral portion of the at least one head unit is exposed through the plurality of apertures.

8. The ink-jet printer head as claimed in claim 6, wherein a rib is formed in the bottom plate, an edge of the rib is flush with a surface of a cover plate so as to form a gap between the at least one head unit and the frame.

9. The ink-jet printer head as claimed in claim 6, wherein the bottom plate is stepped down from the frame so as to project therefrom.

10. The ink-jet printer head as claimed in claim 1, further comprising a nozzle plate on the first surface on the at least one head unit, and a flexible flat cable on the second surface of the at least one head unit.

11. The ink-jet printer head as claimed in claim 10, wherein a depth from a rib formed in a bottom plate to the support is larger than the overall depth from the nozzle plate to the flexible flat cable.

12. The ink-jet printer head according to claim 1, further comprising:
a plurality of head units;
wherein a plurality of supports are formed at a third surface of a bottom plate side by side, each of the plurality of supports are formed at the third surface of the bottom plate side by side, each of the plurality of supports facing the second surface of each of the plurality of head units, and the second surface of each of the plurality of head units is exposed through the plurality of apertures.

13. The ink-jet printer head as claimed in claim 12, further comprising a cover plate attached at the first surface of the plurality of head units so that the plurality of head units are disposed between the frame and the cover plate.

14. The ink-jet printer head as claimed in claim 12, further comprising a common aperture so that the second surfaces of two of the plurality of head units in a row are exposed therethrough, wherein the adhesive is applied at the common aperture so that the second surfaces of the two of the plurality of head units are simultaneously bonded to each one of the plurality of the supports.

15. The ink-jet printer head as claimed in claim 12, wherein each one of the plurality of head units has a plurality of corners; and
each one of the plurality of apertures is disposed about each one of the plurality of corners.

16. The ink-jet printer head as claimed in claim 1, wherein the at least one head unit further comprises a nozzle plate having a plurality of positioning holes, each one of the plurality of positioning holes corresponding to each of a plurality of positioning pins on a jig.

17. The ink-jet printer head as claimed in claim 16, wherein the at least one head unit further comprises a cavity plate attached to the nozzle plate face by face, the cavity plate having a plurality of escape holes corresponding to each one of the plurality of positioning holes, a diameter of each one of the plurality of escape holes being larger than a diameter of each one of the plurality of positioning holes.

18. The ink-jet printer head as claimed in claim 1, further comprising:
a plurality of apertures, each one of which exposes each one of a portion of the second surface of the at least one head unit, wherein the adhesive is applied at each one of the plurality of recesses.

19. A method of bonding a head unit to a frame, comprising:
providing at least one head unit having a plurality of positioning holes, each of the at least one head unit having a first surface and a second surface opposite with the first surface;

providing a bottom plate at the frame, the bottom plate having a third surface and a fourth surface opposite with the third surface, the bottom plate being formed with a plurality of recesses each of which penetrates the bottom plate;

providing a jig having a plurality of positioning pins;

providing a cover plate having a plurality of openings;

disposing the cover plate on the jig;

disposing the at least one head unit on the jig in a manner that each of the plurality of positioning pins is inserted into a corresponding one of the plurality of positioning holes and that the first surface of each of the at least one head unit exposes through a corresponding one of the plurality of openings;

disposing the frame onto the jig in a manner that the third surface of the bottom plate faces the second surface of the at least one head unit and the second surface exposes through the plurality of recesses; and

applying an adhesive between the second surface of the at least one head unit and the third surface of the bottom plate through the plurality of recesses without applying pressure.

20. The method as claimed in claim 19, wherein the height of the positioning pin is greater than the nozzle plate thickness.

21. The method as claimed in claim 19, further comprising disposing the frame onto the jig so that a gap is formed between the at least one head unit and the frame, and disposing each aperture at an edge of the at least one head unit.

22. The method as claimed in claim 21, wherein the adhesive is a denatured acrylic base viscosity ultraviolet adhesive.

23. The method as claimed in claim 19, wherein the cover plate further includes a first bend and a second bend and applying a sealant between the first bend and the frame and the second bend and the frame.

24. The method as claimed in claim 19, further comprising:
 providing a plurality of head units, each one of the plurality of head units having a plurality of corners; and
 disposing each one of the plurality of apertures about each one of the plurality of corners.

25. The method as claimed in claim 24, further comprising:
 disposing at least two of the plurality of head units side by side; and
 disposing each one of the plurality of apertures over a corresponding side of one of the plurality of head units.

26. The method as claimed on claim 24, further comprising:
 filling each one of the plurality of apertures with an ultraviolet adhesive and irradiating the ultraviolet adhesive with ultraviolet light so that all the apertures are simultaneously hardened.

27. A method of manufacturing an ink-jet printer head, comprising:
 providing at least one head unit, each of which includes a first surface where at least one nozzle is provided, a second surface opposite with the first surface, and at least one ink supply hole communicating with the at least one nozzle;
 providing a frame including a bottom plate and at least one ink supply passage, the bottom plate including a third surface facing to the second surface of the at least one head unit and a fourth surface opposite with the third surface, the bottom plate having a plurality of apertures that penetrate the bottom plate, each of the at least one ink supply passage communicating with each of the at least one ink supply hole of the at least one head unit; and
 applying an adhesive between the second surface of the at least one head unit and the third surface of the bottom plate through the plurality of apertures, each of the

plurality of apertures facing a peripheral portion of the at least one head unit such that the peripheral portion of the at least one head unit is exposed through the plurality of apertures.

28. The method as claimed in claim 27, further comprising attaching a cover plate at the first surface of the at least one head unit; wherein the frame is provided after the cover plate is attached to the at least one head unit so that the at least one head unit is disposed between the frame and the cover plate.

29. The method of manufacturing an ink-jet printer head as claimed in claim 27, wherein the adhesive is a hardened under ultraviolet irradiation.

30. The method as claimed in claim 27, wherein the frame further comprising:
a plurality of supports provided side by side; and
a plurality of the apertures, each one of which corresponds to each one of the plurality of supports, wherein each one of the plurality of head units is provided at each one of the plurality of supports, and the second surface of each one of the plurality of head units is exposed through each one of the plurality of apertures.

31. The method as claimed in claim 30, further comprising:
attaching a cover plate at the first surface of the plurality of the head units so that the plurality of head units are disposed between the frame and the cover plate.

32. The method as claimed in claim 30, further comprising:
providing a common aperture on the frame so that the second surfaces of two of the plurality of head units in a row are exposed thereinthrough, wherein the adhesive is applied at the common aperture so that the second surfaces of the two of the plurality of head units are simultaneously bonded to each one of the plurality of the supports.

33. The method as claimed in claim 30, wherein each one of the plurality of head units has a plurality of corners; and
each one of the plurality of apertures is disposed about each one of the plurality of corners.

34. The method as claimed in claim 27, wherein the at least one head unit further comprises a nozzle plate having a plurality of positioning holes, each one of the plurality of positioning holes corresponding to each of a plurality of positioning pins on a jig.

35. The method as claimed in claim 34, wherein the at least one head unit further comprises a cavity plate attached to the nozzle plate face by face, the cavity plate having a plurality of escape holes corresponding to each one of the plurality of positioning holes, a diameter of each one of the plurality of positioning holes, a diameter of each one of the

plurality of escape holes being larger than a diameter of each one of the plurality of positioning holes.

36. The method as claimed in claim 34, wherein the nozzle plate includes at least one nozzle formed in a process to form the plurality of the positioning holes.

37. The method as claimed in claim 27, further comprising:
positioning a plurality of head units each other, wherein after the plurality of head units are positioned, the frame is provided such that the second surface of each one of the plurality of head units is supported at the support of the frame and the aperture of the frame is disposed in order that the second surface of each one of the plurality of head units is exposed therethrough, and the adhesive is applied at the aperture such that the plurality of the head units are bonded to the support.

38. The method as claimed in claim 37, further comprising:
providing a jig including a plurality of positioning pins, wherein each one of the plurality of head units includes a plurality of positioning holes, each one of the plurality of positioning holes corresponding to each one of the plurality of positioning pins, and wherein after the plurality of the head units are positioned at the jig in a manner that each one of the positioning pins is inserted into each one of the plurality of the positioning pins, the frame is provided such that the second surface of each one of the plurality of head units is supported at the support of the frame and the aperture of the frame is disposed in order that the second surface of each one of the plurality of head units is exposed therethrough.

39. The method as claimed in claim 38, further comprising:
providing a cover plate between the jig and the plurality of head units, wherein after the cover plate is placed on the jig, the plurality of the head unit are positioned at the jig.

40. The method as claimed in claim 29, wherein the adhesive is a denatured acrylic base viscosity ultraviolet adhesive.

41. A method for bonding a head unit to a frame, comprising:
providing a plurality of head units, each having a first surface, a second surface opposite with the first surface, and a nozzle plate formed at the first surface having a plurality of nozzles;
providing the frame having a third surface;
disposing the plurality of head units in a manner that the nozzle plate of each of the plurality of head units is positioned in a common plane side by side;

disposing the frame in a manner that the third surface of the frame faces to the second surface of each of the plurality of head units; and

applying an adhesive between the third surface of the frame and the second surface of each of the plurality of head units such that the plurality of head units are fixed side by side with the nozzle plate of each of the plurality of head units positioned in the common plane.

42. The method according to claim 41, wherein the frame includes a bottom plate having the third surface facing to the second surface of each of the plurality of head units and a fourth surface opposite with the third surface, the bottom plate having a plurality of apertures that penetrate the bottom plate such that the second surface of each of the plurality of head units is exposed through the plurality of apertures, in the adhesive is applied through the plurality of apertures from the second surface of each of the plurality of head units, and the adhesive is hardened under ultraviolet irradiation through the plurality of apertures.